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09/781,631	02/12/2001	Konstantinos Papathomas	END919990060US1	9523

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EXAMINER	
MOORE, MARGARET G	

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1712	3

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Please find below and/or attached an Office communication concerning this application or proceeding.

T-P-3

Office Action Summary	Application No.	Applicant(s)	
	09/781,631	PAPATHOMAS, KONSTANTINOS	
	Examiner	Art Unit	
	Margaret G. Moore	1712	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 to 30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 to 30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

1. Claims 3, 5, 6, 11 to 20, 23, 25 and 26 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

With regards to claims 3 and 23, the specification fails to describe this claim limitation and as such there does not appear to be adequate enablement in the specification for the skilled artisan to arrive at this limitation. In addition, since the means by which toughness is measured is not mentioned, it would appear to require undue experimentation for one having ordinary skill in the art to arrive at such a composition.

With regards to claims 5 and 25, note that the specification fails to enable the use of cyanide esters. Note for instance page 3 which teaches *cyanate* esters.

With regards to claims 6 and 26, the specification fails to provide enablement for one having ordinary skill in the art to use a glycidyl epoxide in the encapsulant composition described therein.

Finally, with regards to claims 11 to 20, note that the specification teaches that the core-shell component is required to achieve the improved mechanical properties described therein. Thus the skilled artisan would not have been enabled by the specification to make a composition that does not require such an additive.

2. Claims 3, 12, 17 and 23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is unclear what is embraced by this "toughness" measurement since the means for testing toughness has not been defined. As such the breadth of this limitation is unclear and confusing.

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in-
(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 11, 13 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Hanyu et al.

Hanyu et al. teach epoxy resin compositions. See for instance Example 13. This shows a composition having approximately 60 wt% silica, approximately between 14% and 25% epoxy resin and anhydride. Note that this composition contains a silane. This anticipates the instant claims.

6. Claim 12 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Hanyu et al.

Hanyu et al. do not specifically teach this limitation. However, toughness is a property that is inherently associated with a composition. Thus, since the composition of Hanyu et al. meets that claimed, it would appear that the composition inherently meets this toughness limitation as well. Where applicant claims a composition in terms of a function, property or characteristic and the composition of the prior art is the same as that of the claim but the function is not explicitly disclosed by the reference, the

examiner may make a rejection under both 35 U.S.C. 102 and 103, expressed as a 102/103 rejection.

7. Claims 14 and 16 to 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hanyu et al.

Hanyu et al. do not specifically show an example containing a cycloaliphatic epoxide, but note the bottom of column 2 which teaches that such epoxides can be used in the composition taught therein. As such the skilled artisan would have found the selection of such an epoxide to have been obvious. With regards to claim 17, note the rationale, supra, as it applied to claim 12.

With regards to the imidazole of claim 19, note that column 8, line 30, teaches the addition of imidazoles hardening accelerators. From this the skilled artisan would have realized that conventional imidazoles such as that in claim 19 could have been used in the composition of Hanyu et al., thereby rendering such a limitation obvious to the skilled artisan.

Finally, with regards to claim 20, note that wetting agents are common additives in epoxy encapsulating compositions. The skilled artisan would have found the addition of such a known component obvious in an effort to obtain the known benefits and properties thereof. In view of this the skilled artisan would have found the addition of such a conventional additive to the composition of Hanyu et al. obvious.

8. Claims 1, 2, 5 to 8, 11, 14 and 15 are rejected under 35 U.S.C. 102(e) as being anticipated by Tang et al.

Tang et al. teach epoxy resin compositions containing a core-shell particle having a core Tg value of less than 0 °C. The shell is prepared from monomers having a Tg greater than room temperature. See for instance the various particles prepared on columns 10 to 12. This anticipates claim 1. See the various working examples on columns 13 to 20 which include silica in an amount as claimed (silica in the form of quartz). Example 13 uses a cycloaliphatic epoxy resin, while Example 15 uses the anhydride of claim 15.

9. Claims 3 and 12 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Tang et al.

Consistent with that noted supra, the composition of Tang et al. is identical to that claimed. As such the properties inherently associated with this composition would appear to be inherently associated with the composition of Tang et al. Since there is no difference between Tang et al. and claims 1 and 11, the properties found in Tang et al. will be the same as the properties found in the claimed compositions.

10. Claims 4, 9, 10, 13 and 16 to 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tang et al.

With regards to the addition of a silane component, note that the addition of a silane to epoxy encapsulating compositions, in an effort to couple the silica filler with the epoxy resin and to enhance insulating properties and durability, is well known in the art. The skilled artisan would have found the addition of a known component, in an effort to take advantage of the known benefits and properties associated therewith, to have been obvious.

Regarding claims 9 and 16, the Examiner notes that Tang et al. do not show a specific composition containing these components. However Tang et al. teach that both the cycloaliphatic epoxy and the methylhexahydrophthalic anhydride can be used in the composition therein and it would have been within routine experimentation for one having ordinary skill in the art to arrive at such a combination.

Regarding claim 21, note that Tang et al. teach as a preferred utility for the composition therein encapsulating electronic components. See column 8. Thus while Tang et al. do not specifically teach encapsulating an integrated circuit chip and a substrate associated therewith, this would have been an obvious selection as an electronic component since integrated circuit chips are commonly encapsulated with epoxy resin compositions such as that taught by Tang et al.

11. Claims 1, 4, 5 are rejected under 35 U.S.C. 102(e) as being anticipated by Usui et al.

Usui et al. teach butadiene particles for epoxy resin encapsulants. The butadiene core will have a Tg below room temperature. This is covered with a polymer having a Tg of 70 °C or higher. Epoxy resin containing this core-shell particle meet instant claims 1 and 5. The compositions on Table 2 contain a silane coupling agent meeting claim 4.

12. Claim 3 is rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Usui et al

The Examiner relies on the inherency rationale detailed supra for this claim. As such, this will not be repeated.

13. Claims 21 and 23 to 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Usui et al.

Usui et al. teach that the epoxy composition therein can be used to encapsulate IC chips. This differs from the claimed method only in that patentees do not teach the stop of reflowing solder joints. However as acknowledged by applicants on page 2 of their specification, this is a conventional step in the process of attaching chips to substrates. Thus the skilled artisan would have readily recognized the need for such a step, rending this obvious.

14. The remaining references are cited as being of general interest. They teach composition which may anticipate and/or suggest the instant claims, but these references are no closer to the claims than the references cited supra and in an effort to avoid redundancy, these rejections have not been made. Applicants are advised, however, to consider these references if amending the instant claims to overcome the prior art.

Wong et al. teach epoxy encapsulants. This reference notes on column 4 that solder joints are disposed around an encapsulated chip in a "known manner". Fetscher et al. teach encapsulant compositions containing epoxy resin, anhydride curing agent, silica and a silane. Robbins et al. teach a method for adhering surfaces using an epoxy resin composition.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Margaret G. Moore whose telephone number is 703-308-4334. The examiner can normally be reached on Tues. and Thurs. 6:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Dawson can be reached on 703-308-2340. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9311 for regular communications and 703-872-9310 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Margaret G. Moore
Primary Examiner
Art Unit 1712

mgm
April 1, 2002